UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
URANIUM RECOVERY FIELD OFFICE
BOX 25325
DENVER, COLORADO 80225

OCT 1 0 1990

URFO:DCW
Docket File No. 40-8914
SUA-1482, Amendment No. 3
04008914080E

MEMORANDUM FOR: Docket File No. 40-8914

FROM: Dana C. Ward, Project Manager

SUBJECT: REVIEW OF RECLAMATION PLAN FOR HECLA MINING COMPANY'S JOHNNY M MINE

Introduction

By letter dated May 4, 1990, Hecla Mining Company (Hecla) submitted a revised reclamation plan for the Johnny M Mine, near San Mateo, New Mexico. The reclamation plan is required by License Condition No. 11 of Source Material License SUA-1482. The reclamation plan is revised from the original plan submitted September 28, 1988. Hecla's revised report proposes to dispose of all surface tailings offsite. A list of submittals is attached as Enclosure 1. The staff review of the reclamation plan is discussed below.

Reclamation Activities

Reclamation activities for the Johnny M site involve excavation and removal of tailings from two locations within the project area. These locations are designated as the "north area" and "south area" and are illustrated as Figure 3 of the licensee's submittal. Tailings will be collected by use of heavy equipment and then trucked nine miles to Quivira Mining Company's tailing impoundment.

Hecla's submittal of July 1, 1988, addressed the methodologies used for determining the extent of radium-226 contamination. Surface gamma readings were taken in areas unaffected by the Johnny M mine operation and correlated with radium-226 soil content as determined by laboratory analysis. Correlation formulas were developed for both the north and south area and are as follows:

PM:URFO	PM:URFO	OD:URFO	D:URFO:RIV
DCWard/OD	DLJacoby	EFHawkins	REHall
10/9/90	10/9/90	10/10/90	10/10/90

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Ra-226, pCi/g = 0.55 μR/hr-9.34 (North Area)
and
Ra-226, pCi/g = 1.00 μR/hr-21.34 (South Area)

Background Ra-226 surface soil concentrations were determined to be 1.4 pCi/g for the North Area and 1.1 pCi/g for the South Area. These readings appear to be consistent with background levels obtained at other uranium mills. The first correlation equation, written above, predicts that at a gamma reading of 29 μR/hr the cleanup criteria of 6.4 pCi/g (5 pCi/g + 1.4 pCi/g background) would be achieved for the northern area. The second correlation equation predicts that at a gamma reading of 27 μR/hr the cleanup criteria of 6.1 pCi/g (5 pCi/g + 1.1 pCi/g background) would apply for the southern area. These equations appear to be correct and representative of actual conditions onsite.

Hecla's submittals of September 28, 1988, and May 4, 1990, outlined two areas that had been defined by gamma survey and soils testing to exceed the criteria as allowed under 10 CFR 40, Appendix A. As stated previously, these areas were designated as the "north area" and the "south area". The north area reclamation involves removal of up to 36 inches of tailings and tailings contaminated soils over an approximate two (2) acre area. This area was contaminated by back-filling of an existing vent hole under agreement with the State of New Mexico. A portion of the land adjacent to the tailings cleanup area was found to contain ore remaining from milling operations. This area was soil sampled and the ratios of U-nat to radium confirm that tailings are not present.

The south area reclamation involves the removal of up to 36 inches of tailings and tailings contaminated soils over an approximate six (6) acre area. One area of concern was noted in review of the plan. The south area contamination ends abruptly at a fence/property line along the west side of the figure at a depth of 18 inches. The licensee was contacted and to the best of their knowledge the tailings do stop at this line. Further testing or confirmatory sampling will have to be done west of the fence/property line to determine compliance with 10 CFR Part 40 Appendix A.

Contaminated soils from both areas will be removed by scrapers, dozers, and loaders; placed into haul trucks; covered by tarps; and taken to Quivira Mining Company's tailing impoundment for disposal. Cleanup will be guided by field gamma measurements during and following excavation. After cleanup of an area has been performed, verification surveys will be conducted using instruments and gridpoints established during the original radiological survey. Hecla will also conduct soil testing by retrieving samples from 10 percent of the grid points in both the north and south areas.

After areas cleaned of tails have been radiologically verified to meet criteria, the disturbed land will be graded into natural contours and any

closed depressions will be eliminated. These disturbed parcels will be revegetated with species native to the area and fertilized. If climatic conditions prevent immediate revegetation from being conducted, mulching will be applied to the soil to prevent erosion until planting can be accomplished.

Conclusion

Hecla's revised reclamation plan submitted by letter dated May 4, 1990, for the Johnny M site addresses the major areas of concern regarding cleanup and restoration of the site. Hecla's proposal to transport tailings to Quivira's tailings impoundment eliminates the need for transference of land ownership to a State or Federal trust.

Hecla's reclamation plan did not address radiologic health and safety. Due to the limited work to be performed the staff concludes that radiological hazards are probably minimal. To assure that no overexposures do occur, Hecla will be required to perform urine analysis on all employees working at the Johnny M site. This requirement will be placed in the license.

Figure 2 of Hecla's reclamation plan for the Johnny M Mine site illustrates that no contaminated soil was located on the west side of a fence/property line; while on the east side contamination extends 18" deep. It is unreasonable to believe that contamination ends abruptly at this artificial boundary. Therefore, Hecla will be required to perform radiological surveys including verification soil analysis to confirm that the area west of the fence/property line is uncontaminated above 5 pCi/g plus background.

Hecla will also be required to notify the NRC upon completion of all radiological surveys to allow the NRC the opportunity to perform a verification survey prior to final contouring and revegatation. Hecla will also produce a final written report summarizing the work performed and the results of all surveys and soils test.

Therefore, pursuant to Title 10, Code of Federal Regulations, Part 40, Source Material License SUA-1482, License Condition No. 11 is revised to read as follows:

11. The licensee shall conduct the cleanup of the Johnny M Mine site in accordance with submittals dated September 28, 1988, and May 4, 1990, including the following additions:

    A. The Uranium Recovery Field Office shall be contacted upon completion of all radiological surveys and allowed the opportunity to perform verification surveys prior to final contouring and revegetation.

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B. Hecla will submit to the Uranium Recovery Field Office no later than 60 days after completion of reclamation a final report summarizing the work performed and the results of all surveys and soils tests conducted.

C. The licensee shall be required to implement a bioassay program, including baseline, biweekly, and end of work urine sampling. All results shall be submitted with the final report. Any sample that exceeds 30 µg/l uranium will be reported to the NRC within 48 hours.

D. Hecla will be required to confirm by verification surveys and soil sampling that the area west of the fence/property line in the "south area" meets the 5 pCi/g plus background cleanup criteria.

Dana C. Ward

Dana C. Ward
Project Manager

Enclosure:
As stated

Case Closed: 04008914080E

bcc:

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PDR/DCS
URFO r/f
ABBeach, RIV
LLO Branch, LLWM
DWard
DLJacoby
BGarcia, RCPD, NM
EMontoya, NM
8914/080E/DCW/90/08/30/M

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ENCLOSURE 1

LIST OF SUBMITTALS

February 6, 1987	Johnny M Termination Report. (Report to the State of New Mexico on reclamation activities.)
August 28, 1987	Schematic Work Plan and Decision Tree
July 1, 1988	Report of Investigation, Johnny M Mine Site, Hecla Mining Company. (Site survey and soil testing report for the Johnny M Mine.)
September 28, 1988	Reclamation Plan, Johnny M Mine Site.
May 4, 1990	Reclamation Plan, Revision No. 1 Johnny M Mine Site.